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SUBCUTANEOUS DIVISION

OF

URETHRAL STRICTURE.

BY

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MOBILE, ALABAMA.

REPRINTED FROM THE
TRANSACTIONS OF THE AMERICAN SURGICAL ASSOCIATION,
MAY 1, 1886.



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SUBCUTANEOUS DIVISION OF URETHRAL STRICTURE.

I HAVE selected as the subject which I shall have the honor to bring before the Association at this session, "Subcutaneous Urethrotomy in Close Organic Stricture of the Urethra." I do this for the reason that it has seemed to me better to discuss a question concerning which I have had a large personal experience, rather than to recite the observations of others, however interesting and important the latter might prove.

I fancy, at least, that the views I have to offer are not without importance, and I am convinced that they will not prove so familiar to you as many other topics which I might have selected. I shall, therefore, introduce to your notice, in the simplest and briefest manner, a running history of external operations upon the constricted male urethra, and then describe the operation which I have been induced to devise and adopt as the one which, to my mind, offers the best possible results in those cases of impassable stricture of the urethral canal which will not yield to the milder methods of dilatation, in one form or another, or to the operation of internal urethrotomy.

Organic urethral stricture becomes sometimes so difficult and so obstinate an affection to treat that we are forced to resort to other than the usual methods for its relief. Such being the case,

is not surprising to find that, from the earliest times, dangerous and difficult operations have been introduced for its cure, or rather for its immediate relief: among which are incisions made from the outside, through the integument and urethral wall, dividing all the diseased structures, and leaving the parts gradu-

ally to reunite. Such operations may all be embraced in the one general term "External Urethrotomy."

As far back as we have any recorded history of surgery, we find the ancient surgeons, like ourselves, encountering difficulties in the treatment of urethral stricture, and oftentimes unable to gain an entrance into the bladder through the natural channel. Hence, they were forced to resort to the use of the knife, by which incisions were made into and through the urethral walls. Celsus was evidently familiar with such an operation, for in Book VII., Chapter XXVI. of his writings, we find this passage:

"In suppression of urine, if the urethra is stopped by a stone, the prepuce must be drawn out as much as possible, and, the glans being covered, it must be tied by a thread ; then, on one side, a longitudinal incision must be made into the penis, and after this the prepuce is let go ; for by this means the sound part of the skin covers the incision in the penis, and the urine will be discharged in the natural way."

It is certainly very evident that he intended to speak of *retention*, and not *suppression* of urine, and that the incision was made in the urethra and not into the body of the penis. A natural inference to be drawn from this quotation is that, if Celsus advised opening the urethra to get rid of an impacted stone which was obstructing the flow of urine, he evidently would have advised a similar operation in a case of retention caused by any other obstruction, as, for example, stricture of the canal. Still later than the time of Celsus, we read in the writings of Rhazes in the tenth century, a clear description of such an operation having been done for obstruction of the urethra. Again, Avicenna, who wrote in the eleventh century, mentions puncture of the urethra through the perineum for the relief of retention of urine. These operations appear to have been intended solely to give exit to retained urine, but with no intention or proposed plan of curing the disease which caused or produced the obstruction; the object of the ancients being more the relief of the immediate symptoms than an endeavor to eradicate the disease.

The first reliable mention of an operation of which we have

any positive knowledge, which was performed for the cure of stricture, and not entirely for the relief of retention, is the one recorded by Richard Wiseman, in his work entitled *The Ill Consequences of Gonorrhœa*. Here he speaks of having witnessed, in the year 1652, an operation done by Mr. Edward Molins, "which," says Wiseman, "consisted of an incision into the urethra near the neck of the bladder, for retention of urine; that the knife did not readily divide it, for it was as hard as a gristle; the urethra being opened, the urine gushed out, and the wound remained fistulous." In this operation, if we fully understand Wiseman's description, the incision was made into the urethra posterior to the obstruction, and subsequently the incision was carried through the coarctation to its anterior face, a very similar operation to the "boutonnière," a proceeding of which we shall have occasion to speak more at length in the course of this paper.

Again, in the latter part of the same century, we find Soligen performing similar operations, once at Livourne, and again at the Hague. Then we hear of an operation, which was designated "la boutonnière," being done in 1687 by François Tolet, for the relief of retention, but not for the cure of stricture; and he tells us that it was an operation much in vogue "by men of great skill and reputation," and employed by them only in cases of great emergency.

Then, François Colot follows him, operating in 1690 for the cure of impassable stricture complicated with perineal and scrotal fistulæ. From that date onward we find, scattered here and there through the early literature of the profession, only references to the subject, until the year 1730, when Ledran operated upon "a case of organic impassable stricture;" this operation he did at two sittings," and after the following manner: The first day, the perineum was opened down to the urethra, and on the succeeding day he opened into the canal upon the anterior face of the stricture, through which, after gradual dilatation for five days, he passed a bougie on into the bladder; when this had been accomplished, he "slit up the urethra as far as the neck of the bladder." Gradual dilatation was then resorted to, by which

the entire length of the urethra was stretched open, and the patient is said to have gotten well.

About the same date, J. L. Petit, on numerous occasions, appears to have performed similar operations for retention of urine, and in some cases he divided the stricture at the same time, with the evident intention of curing the obstruction. Petit relates a case where he performed the operation for the cure of a stricture through which it was impossible to pass an instrument, although there was no retention of urine, and no fistulæ through which urine could find its way. He cut through the urethra at the face of the stricture, upon a grooved sound introduced down the canal to the seat of obstruction, after which he forced a trocar through the obstruction and into the bladder, following the supposed course of the urethra. He then slit up with a bistoury the strictured portion, tied in a catheter, and left the wound to heal by granulation, which it did in about a month or longer time, and the patient is reported as having been entirely cured. This was probably the first case in which a "sonde à demeure," or retained catheter, was ever used. Petit subsequently resorted to a similar operation in a number of cases, and states that, whenever he has performed "la boutonnière" (as he termed it) for retention of urine, his patients always "regained the freedom of the canal when he comprehended the obstacle itself in the incision." But he is very careful to remark that "the boutonnière is to be shunned whenever the introduction of a sound is practicable."

In 1750, twenty years after the operations of Ledran, Mr. Sharp, of England, described an operation very similar to his, "by cutting in *perineo* if possible upon a staff," and recommended its performance;¹ but, in 1782, we find him condemning it in no measured terms, and advocating in its stead the suprapubic operation for relief of retained urine, as one less to be feared, and less serious in its results.² Only six years after this date—*i. e.*, in 1788—John Hunter comes to the front, and

¹ "A Critical Inquiry," London, 1850.

² A Treatise on the Operations of Surgery, etc., by Samuel Sharpe, F.R.S., etc. Tenth edition. London, 1782. Chapter xv. pages 77, 78.

not only advises but urges the operation as the proper one for the cure of strictures complicated with perineal fistulæ; he himself having performed, in 1783, an operation in which he cut upon a staff introduced down to the stricture, and exposed the face of the obstruction, which was subsequently dilated so that the staff was with difficulty passed on into the bladder. This was neither new nor original with Hunter, for in the year 1738 both Astruc and Daran had described the operation as done by Hunter, and again in 1748 called the attention of surgeons to the method; but they both opposed and advised against its performance. In 1786 both Chopart and Desault performed the operation in various ways, but the mortality proved so great, and they denounced it in such violent terms, that very few surgeons could be found who were willing to attempt it. Desault writes:

"The operation known under the name of 'la boutonnière,' though apparently better adapted to the nature of the disease, is, almost always, either useless or dangerous. It is useless if the surgeon has been able to pass a grooved director for the purpose of operating, because in such a case he might just as well introduce a hollow sound. It is dangerous if the surgeon has no director to guide him, for then he makes his incisions at hazard, may miss the canal, and divide parts, the lesion of which is followed by more or less serious accidents."

Chopart having had no success with the operation, became bitter in his denunciations of the procedure; and the failures, together with the great mortality attending it, about the close of the last century, threw it into such disrepute, that very few surgeons could be induced to perform it. Mr. Sharp, of England, then condemned it, and very soon it fell into disuse in France, and was not again practised in England until about the year 1807, at which time Sir Charles Bell called attention to it as an operation peculiarly adapted to, and required in those cases of aggravated stricture of the urethra complicated by perineal fistulæ; still the operation did not receive favor in England, and we hear little or nothing more of it until the year 1817, when it was revived and introduced into America by the

late Dr. Alexander H. Stevens, of New York, who then operated successfully upon a case of stricture by this method after all other means of relief had failed. Then Dr. Jameson, of Baltimore, began to operate in 1820, and by the end of the year 1823 he had performed ten operations without a single death. This remarkable success with a hitherto unsuccessful operation naturally directed the attention of American surgeons to the method, and it was not long before it became popular in New York and other Eastern cities. Dr. D. S. Rogers, of New York, also began the operation in 1823, and very soon laid before the profession the report of twelve operations, all successful. By the year 1843 Warren, of Boston, March, of Albany, Hoffmann, Post, Watson, and Buck, of New York, with many other American surgeons, had, by large numbers of successful cases, all done without the use of a conductor, so fully established the propriety of the operation, that it at once became an accepted operation on this side of the Atlantic.

Carefully examining the reports of these cases, we find they were all performed after the method of the "old boutonnière;" that is to say, without a conductor, which goes to prove they were cases impassable to instruments. So, before we investigate the subject further, it may not be out of place to show what is meant by that term, and then analyze the methods which come under that general description.

This operation has been performed in so many ways that we are at a loss to understand the exact idea which the old authors wished to convey when they used the term "la boutonnière." The most explicit description which we have been able to find, is the one given by Desault in his treatise upon the diseases of the urinary organs; this is, to my mind, most clearly evident that the operation was performed in three ways: *First*, upon a conducting staff which was passed through the stricture and on into the bladder, upon the groove of which conductor the incision was made. *Secondly*, where a staff was passed down the urethra until it reached the anterior face of the stricture, and the urethra opened upon the point of the staff, after which the stricture, together with the integuments, were all laid open by

the knife upon a director which was introduced through the stricture *from its distal opening*. *Thirdly*, a staff was passed down to the stricture, and the urethra opened in the membranous portion posterior to the obstruction, through which opening a grooved director was passed *from the posterior face* of the obstruction forward through the stricture until it came in contact, or nearly so, with the end of the staff as it rested upon the anterior face of the coarctation; then a knife was pushed along the groove of the director from behind forward, and the entire stricture, together with wall of urethra and integuments, all ripped open: this last method is the one usual with French surgeons. This completes a running epitome of the operation from its early history, to the year 1849, when Mr. Syme, of Edinburgh, called the attention of the profession to "A New Operation for the Cure of Urethral Stricture:" a method which he had devised, and which consisted in passing a special staff through the stricture, then opening the urethra behind the coarctation upon the small grooved director attached to the staff; in this groove he passed a sharp, narrow-bladed knife forward through stricture, integuments, and all, laying the urethra freely open. It is, however, scarcely necessary to consume time by a long description of the method of the Scotch surgeon, or a detail of his cases, for I presume all are perfectly familiar with it.

It may not be uninteresting, however, to show what were the conclusions which he proposed to draw from his method; and it will serve my purpose better if I quote his own language on this point—they are as follows:

"1st. That there is no stricture truly impermeable, and that, with time and care in every case, an instrument may be passed through it, and serve as a guide for the knife.

"2d. That all strictures which cannot be remedied by simple dilatation, admit of effectual relief only through a free division of the contracted part of the canal.

"3d. That this object can be obtained with certainty and safety only by an external incision in a line corresponding with the raphé of the perineum upon a grooved director passed through the stricture.

"4th. That the only after-treatment required is the introduction of a catheter during forty-eight hours, with the subsequent use of a full-sized bougie at distant intervals.

"5th. That the operation, if properly performed, is free from any risk whatever of hemorrhage, extravasation of urine, or fistulous opening."

I shall examine these conclusions and see how far they may be fully received; whether or not, in the first place, the proceeding is entitled to be considered "a new operation;" how far, if in any particular, it differs from one of the varieties of "*la boutonnière*;" and, more important than all, whether it is free from danger. That it is not a new operation has been clearly proved by the description of the *boutonnière* by Desault. In his first division, he shows that the staff was passed through the stricture and the coarctation cut upon the groove of the same; in his third division, that the urethra was opened posterior to the contraction, just as Mr. Syme described it, a director passed from behind forward, and the stricture cut from its posterior to its anterior boundary. The director of Desault was passed from behind, whilst that of Mr. Syme was introduced from the front; this is the non-essential difference in the two operations, one of no consequence, since the stricture, integuments and all, were laid open and left to granulate after both operations.

Mr. Syme has assumed the non-existence of impermeable stricture, and says:

"There is nothing of more consequence in the treatment of stricture than the knowledge of the fact that this alleged impermeability has no real existence except in those cases where the urethra has been divided by violence and allowed to cicatrize with obliteration of the passage beyond the opening at the seat of injury. It is obvious, indeed, that if the urine is permitted to pass, no matter how small a stream, or even by drops, there must be room for the introduction of the instrument, if it be sufficiently small and properly guided.

Even this assertion is not new, since Mr. Liston had, in 1835, enunciated the same opinion, as shown by this language—"there are no strictures impassable that I have ever seen, for

where any water comes away, you can, by patience and perseverance, get a catheter through sooner or later." Still these assertions have not been proved, since we find in Mr. Syme's own work two instances in which he acknowledges that he was unable to pass his special staff, and consequently he was forced to open the urethra anterior to the stricture and then cut through the same, as in Desault's description of his second division of la boutonnière. Mr. Liston also has been repeatedly foiled in his attempts to introduce a catheter through an ordinary stricture, and was obliged to have recourse to an operation of tapping the bladder both above the pubis and also through the rectum. Yet Mr. Syme asserts that he has never been called upon to perform his operation for impermeable stricture, and simply because he had never met such a case. He makes permeability an indispensable prerequisite to the performance of external division, and does so upon the ground of the "*danger, uncertainty, and difficulty*" which, he asserts, must attend all operations done in the perineum in search of the urethra, without a guide. His own assertions are conclusive evidence that there are impermeable strictures, even if we had no better authority; but upon this point the united experience of almost all surgeons goes to show and to prove that there are cases of stricture oftentimes met with which are impassable to instruments yet not absolutely impermeable to urine.

2. His second conclusion is far from being sustained, since there are too many well-attested cures of resilient stricture—strictures which have proved rebellious to dilatation—which have been thoroughly relieved and permanently cured by the simpler operation of internal urethrotomy; thus sustaining the well-established fact that when a stricture is not impassable to instruments, **external division is contraindicated**.

3. If we can rely upon the testimony of Mr. Lizars—and his assertions have not been refuted—Mr. Syme's own cases were not with certainty and safety relieved. Mr. Lizars conclusively showed that the statements of Mr. Syme were not to be relied upon, since his cases had not been fairly or even correctly reported by himself, and that a large number of his operations

proved failures, since in many instances the patients were placed in a most terrible condition as the result of his method: profuse hemorrhage occurring in quite a number of them, and also extravasation of urine followed by extensive sloughing, terminating in numerous fistulae. Mr. Syme himself acknowledges the dangers of the operation when he writes, giving the history of some "eighty or ninety cases," that "alarming symptoms were by no means rare, since every third or fourth patient suffered from rigors, vomiting, delirium, or suppression of urine."¹ Besides these troubles, he met with two fatal cases which he attributed to contact of the urine with the wound.

It is not the purpose of this paper to cast the least reflection upon the distinguished surgeon whose name has been so intimately associated with this operation, nor to condemn the operation of external section. I am writing its history, and desire simply to give the result of my investigations, and show what objections are sustained against it. It is certainly proved, that from the most remote times it has been considered a dangerous and difficult operation, and even in our own day, when surrounded by all the appliances of improved surgery, and encouraged by the success which has attended it, some of the best modern authorities pronounce it an operation not free from danger, but one which requires the most consummate skill for its successful execution.

The venerable, gifted, and distinguished founder of this Association, a man who made, and has left his impress indelibly stamped upon the surgery of the nineteenth century, used this forcible language when writing of the operation :

"The operation is by no means free from danger and requires the most consummate skill for its successful execution. None but a madman or a fool would attempt it unless he had the most profound knowledge of the anatomy of the parts, and a thorough acquaintance with the use of instruments. Of all operations of surgery, this is the least to be coveted."²

¹ *Lancet*, August 21, 1858, p. 191.

² S. D. Gross, Diseases, Injuries, and Malformations of Urinary Organs. Second edition, 1855, page 801.

The operation has not been fully accepted in France, and was rejected by a commission of the French Academy which was appointed to sit in judgment upon it. Civiale, than whom no sounder authority in matters pertaining to genito-urinary surgery has lived, himself never performed it, although he was known frequently to have had resort to the old operation of "la boutonnière."

With all the objections brought to bear upon the various operations of external section, still we are, as I before stated, sometimes called upon to relieve a patient from retention of urine caused by obstinate and impassable or impermeable stricture: and when that rare contingency does arise, and when milder measures have utterly failed, the urethra remaining absolutely impervious,—letting in no catheter, letting out no urine—then undoubtedly this condition will establish a necessity, a legitimate and imperative and urgent necessity, for our making an artificial vent for the discharge of the contents of the distended bladder.

This brings me to the consideration of the indications which render such an operation necessary.

Indications.—1st. The impossibility of passing a sound into the bladder through the urethral canal, when a firm organic contraction blocks up the urethra and proves rebellious to either dilatation or internal urethrotomy. Here we are imperatively called upon to relieve an over-distended bladder, else we find cystitis being developed, bladder walls becoming hypertrophied, ureters dilated, and kidneys disorganized. The nervous system, overwhelmed by the absorption of urea, cerebral symptoms speedily ensue, and the patient dies comatose. In such cases, the constitutional distress is urgent, and the demand for relief imperative; it then becomes dangerous to temporize with milder methods, and as a rational but *dernier ressort* we must perform an external section. But even in such cases it is not always necessary to do an operation through the perineum, or from without inward; for in some cases it is possible to cut down through the axis of the urethra into and through the stricture, although it may be impassable to the smallest instrument. Of

this I speak advisedly, since I have myself done such an operation upon several occasions where I was not willing to subject the patients to the gravity of an external section. It is true the operations were exceedingly difficult, yet they were completed with perfect safety and relief to the patients.¹

2d. Infiltration of urine resulting in abscess may necessitate an external section. I do not here refer to those sudden cases where from direct injury the urethra has been ruptured and infiltration is the consequence, but I allude to those cases where a tight stricture has existed for a length of time; where a periurethral abscess has resulted from a small opening in the urethra behind the stricture, and the gradual infiltration of urine has lighted up inflammation to a degree sufficient to form a circumscribed deposit of pus. In such cases it is necessary to open the abscess for the purpose of relieving the sufferings of the patient. To do this more effectually, it will be well to carry the incision still deeper, and lay open the urethra at the site of rupture, then carry the knife forward through the stricture to the point of a sound introduced down to the anterior face of the coarctation.

3d. The third indication *might* be placed where certain cases of old tight strictures complicated with urinary fistulae through which a great part of the urine escapes at every act of micturition.

Many surgeons contend that here is a clear and unmistakable indication for an external section, but, unless in some exceptional cases, I cannot give my unqualified assent to the proposition, since experience has clearly shown that in almost all cases of urethral fistula, so soon as the lumen of the canal is fully restored, the fistula heals; and very soon thereafter, when the normal calibre of the urethra has become established, the innomodular tissue which surrounds the fistulous opening becomes absorbed. Such being true, I prefer an internal section as less dangerous and equally efficacious.

¹ For report of cases, see Richmond and Louisville Medical Journal, Sept. 1873, vol. xvi. page 285.

4th. The most important indication which may arise, is when the urethra has been ruptured by a violent blow, and when the effects of such injury are rapid and severe. In some of these cases serious results do not take place immediately after the injury; but in others, enormous extravasation of blood may occur immediately upon the reception of the injury—then retention takes place, and the whole cellular tissue becomes infiltrated with urine.

In such cases the operation of external section becomes an absolute necessity, not only for the purpose of evacuating extravasated blood and infiltrated urine, but for the immediate purpose of getting a catheter into the bladder; for it becomes an almost impossible matter to introduce an instrument *per vias naturales* when the urethra has been lacerated. If, however, a free incision is made through the perineum upon the point of a large sound, first passed carefully down the canal to the point of injury, then the sound can be carried into the bladder and the patient placed in comparative safety.

5th. Traumatic stricture—that is, where a stricture has been formed as the result of a direct injury done to the urethra; for example, where fractures of the pelvis have injured the urethra and blocked up with a dense deposit the perineal and ischio-rectal regions. It is very well known how intractable such strictures prove, and how difficult, in many cases, it is to introduce an instrument of even the smallest size into and through such coarctations. In these cases ordinary dilatation proves inefficient, and internal urethrotomy is often of little or no avail. Here, then, we have an evident and clear indication for external section, as the speediest method by which we can gain access to the bladder.

6th. A calculus impacted in the urethra behind a stricture, if large, may be an indication for opening the urethral canal. In some of these cases it is very difficult and oftentimes impossible to thread even the smallest filiform guide through the stricture for the purpose of conducting the staff of an internal urethrotome. In such cases, when an imperative necessity exists for the evacuation of an over-distended bladder, we have only the

alternative of aspiration or external section remaining; and of the two, external section seems preferable, and should be done, thus removing the calculus and at the same time opening the stricture by an incision directed from behind forward through the coarctation. Even here an exception may arise should the calculus be small, in which event it is best to open the face of the stricture through the axis of the urethra, so as to expose the calculus, which can then be broken up and removed by the urethral brisepierre of Reliquet (Fig. 1), an ingenious instrument for this purpose, which this distinguished surgeon presented to the French Academy for its consideration in 1871.

FIG. 1.



7th. The next indication is when extravasation of urine has occurred from sudden rupture of the urethra, and in a short time extensive sloughing has taken place from infiltration of urine into the loose tissue of perineum, penis, scrotum, and groins. Here is an absolute necessity for making free incisions for the purpose of evacuating necrotic tissue together with pus and urine. In these cases it is well, if possible, to open the urethra at the site of stricture, so as to admit of the introduction of a catheter into the bladder. This is, however, not always possible when we come to consider the disorganized condition of the parts. In such cases nothing is left the surgeon save to meet the emergencies as they may arise.

8th. The last indication, if I may term it such, is the one in which Mr. Reginald Harrison advocates the combined operation of internal and external section. He advocates doing an external section immediately following an internal operation, and then keeping the bladder emptied through a large elastic drainage tube carried from the external opening into the bladder, and retained until the internal urethrotomy has healed. His reasons for this are, that patients, in his hands, have usually suffered

from urethral fever after the first passage of urine, and that they do not have that trouble until the incision has been bathed by the urine in its passage along the canal. To avoid this complication, he advises doing the external section and draining the bladder. As it would necessarily increase the length of this paper for me to enter into a long detail of his special views upon this subject, I shall now close the indications for the operation by calling the attention of those who desire to know more of his paper to *The British Medical Journal*, of July 18, 1885.

In a given case, where an operation has been decided upon, the question arises as to what form of operation offers the best prospects of success, and which, under the circumstances, can be done with most ease to the surgeon. As for myself, I have found the operation as recommended, by Mr. Syme, not only difficult to perform, but unsatisfactory in its results. An established maxim with surgeons has been that "a stricture being permeable to instruments, an external division is contraindicated." Mr. Syme, on the other hand, has reversed this, and made *permeability* an indispensable prerequisite to the performance of an external section. To this I cannot give my unqualified assent, since, in a very large experience, I have found that whenever I have been enabled to pass a guide through the stricture, I have almost always been enabled to perform a successful internal urethrotomy. Mr. Syme has unhesitatingly admitted the danger of his operation, and mentions hemorrhage as being often alarming. This trouble I have not encountered in my *internal* sections, and when I come to examine the records of several hundred cases in which I have done this operation I find only two instances in which hemorrhage has proved a troublesome factor, and both of these made good recoveries. In my operation for internal section I always carry my incisions through the upper portion of the roof of the urethra, as by so doing I am convinced the danger of hemorrhage is reduced to the minimum, because there are no arteries to cut, and the small venous bleeding soon ceases. On the other hand, extensive incisions made into the floor of the urethra and through the integument are done in the line of important structures, and vessels of con-

FIG. 2.

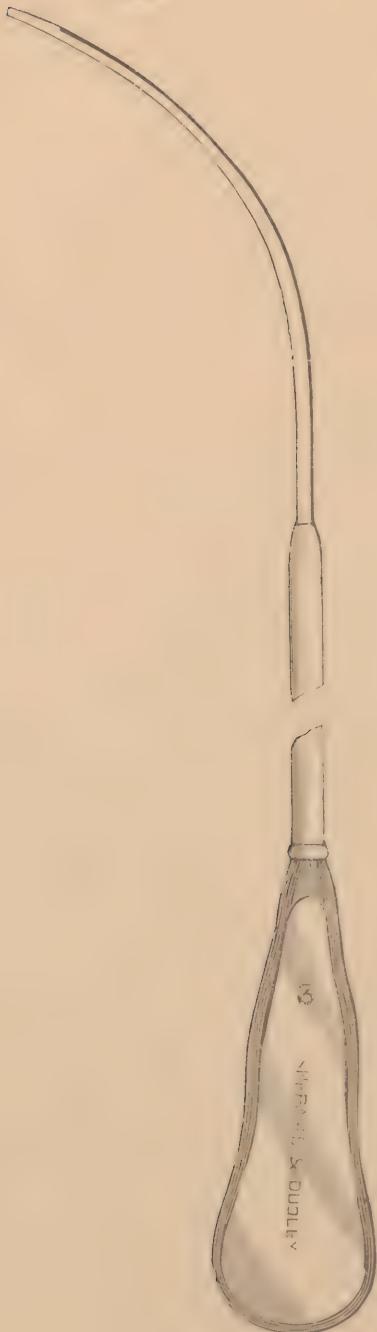


FIG. 3.



siderable size, which, if wounded, give rise to profuse hemorrhage, and not infrequently serious consequences.

Again, in tight strictures it is extremely difficult to carry the small probe-like director (Fig. 2) from the meatus down the urethra and through the stricture; especially is it difficult to do so if there be false passages in the urethra, or within the stricture itself, and even if there be none already formed it is a very easy matter to make them. Hence it is that I should prefer to select the modification of this operation as proposed and introduced to the profession by my friend Dr. Gouley, of New York.

The main points in his operation consist in the manipulation of a delicate whalebone guide through the stricture, upon which guide he threads his tunnelled sound (Fig. 3) and passes it down to the anterior face of the coarctation; after which he opens the urethra from the outside upon the groove of the sound just in front of the stricture. This being accomplished, he searches for the whalebone guide, which then serves to conduct a very delicate, narrow-bladed knife (Fig. 4) into and through the obstruction; then the whalebone guide is removed and its place supplied by a delicate probe director (Fig. 6), which is pushed on into the bladder, and then the urethra, superficial fascia, and integuments are freely opened. His first incision is made directly in the median line of the perineum from the base of the scrotum to within half an inch of the margin of the anus, and is usually one to one and a half inches in length.

In opening the stricture he directs that the edge of the knife be held downward, and that the coarctation shall be freely divided, taking care to carry the incision into the uncontracted canal about half an inch posteriorly. The case is then left to nature, and the urethra and the wound to the unobstructed passage of urine. The objections to Dr. Gouley's method are, the large size of the external incision, and the length of time required for the wound to granulate and heal. His incision through the stricture being made in the floor of the urethra endangers bloodvessels of importance, which become difficult

FIG. 4.



FIG. 5.



FIG. 6.



FIG. 7.



of ligation if cut. The wound left to granulate is liable to the formation of numerous fistules, and a long time elapses before the patient is well enough to resume his ordinary vocations.

In this connection, I may refer to the method of Mr. Wheelhouse, which is known as "the Leed's operation." It possesses some advantages over the other forms which have been mentioned, chiefly so, from the ease with which it is performed; but it has still the disadvantage of leaving an open wound in the perineum to heal by granulation, and consequently it is liable to the after-consequences of perineal fistula. Mr. Wheelhouse certainly deserves great credit for the very ingenious and practical manner in which he has planned his operation, and his procedure has the advantage of greatly increased precision over any other form with which I am acquainted. By it an operation which was hitherto one of the most difficult in surgery, has been rendered comparatively easy, and the published reports go to show that the results have been vastly more favorable than from any other method yet described.

This operation is done upon a special staff designed for the purpose, which instrument is fully grooved through the greater part, but not through the whole of its extent, the last half inch of the groove being stopped and terminating in a rounded button-like end (Fig. 8). The urethra is opened *in the groove of the staff, not upon the point*; in this way, certainly securing at least

FIG. 8.



a quarter of an inch of healthy tube in advance of the stricture; the opening in the urethra being held apart by two pairs of fixation forceps, applied one on either side, and the upper angle held up by the button extremity of the staff hooked in it. This opens the urethra and fully exposes the face of the stricture, in which the opening is searched for with a probe-pointed director, which, when it enters the bladder, is turned down so that the groove faces toward the perineum. Then the knife is directed

along the groove and the stricture is carefully and deliberately opened on its under surface, and the passage thus cleared. This being accomplished, the probe-gorget of Mr. Teale (Fig. 9) is passed into the bladder with its concavity looking toward the

FIG. 9.



pubis, so as to receive the point of a catheter, which is now introduced along the urethra until it reaches the gorget, by which it is conducted into the bladder; the gorget is now removed and the catheter tied in to remain three or four days. After the expiration of that length of time the catheter is removed, only to be reintroduced each day or every second day, so as to keep the urethra in a state of patency until the wound in the perineum has thoroughly healed. The operation is ingenious, and, as a form of "la boutonnière," it deserves to be recommended; still it has, to my mind, the disadvantage which attends all of these operations, viz., leaving an extensive wound in the perineum to heal by granulation, exposing the patient to the dangers of pyæmia, and the liability of urinary fistulæ as a sequence. A very interesting description of this operation is to be found in the *British Medical Journal* for June 24, 1876, from the pen of Mr. Wheelhouse himself.

The idea has prevailed that, when the external incision is not large and free, urinary infiltration will necessarily take place; but this is an erroneous conception like that which has existed

in reference to cutting for stone. The urine, obeying the natural law of gravity, does not infiltrate and burrow under tissues when it has an open channel through which it can escape. So it is, whenever a stricture has been fully divided, the urine necessarily follows the course of the urethra.

The healing and suppuration of an open wound being long and tedious, and consequently exposing a patient to the risks of pyæmia, whilst structures having no connection with the existence of the stricture are unnecessarily divided, naturally induced the profession to seek other and less formidable measures of relief. These facts led Mr. Henry Dick, of London, in the year 1853, to publish, in the *Medical Times and Gazette*, a critique upon the operation of Mr. Syme, and at the same time to lay before the profession a description of a new operation, which he termed "The Subcutaneous Division of Stricture." Subsequently he presented, in 1855, a memoir to the Academy of Medicine of France upon the same subject, and therein gave the histories of several successful operations which he had performed. After this, the operation was adopted by Mr. William Allingham, and also by Mr. William Adams, both of whom made favorable reports of successful operations.

I will now briefly describe the method of Mr. Dick, and then close this paper with an illustration of an operation which I devised in 1868, and which, to the present time, I have seen no valid cause to discard.

His method consists in first dilating the stricture sufficiently to admit the director of his catheter, which is a medium-sized catheter of moderate curve, upon the end of which are two buttons or knobs having a groove between them, which groove is continued on, into, and along the director; the catheter contains the small grooved director which can be drawn in or pushed out, so as to traverse the stricture (Fig. 10).

The operation is done in the following manner: The catheter, with the director concealed within it, is passed down the urethra until its point reaches the anterior face of the stricture, when, by a gentle manipulation, the point of the director is made to engage the stricture, and is then passed on until it enters the

bladder; the surgeon then takes a very small sharp-pointed tenotome (Fig. II), and, feeling in the perineum with the index finger of his left hand for the buttons or knobs, plunges the

FIG. 10.

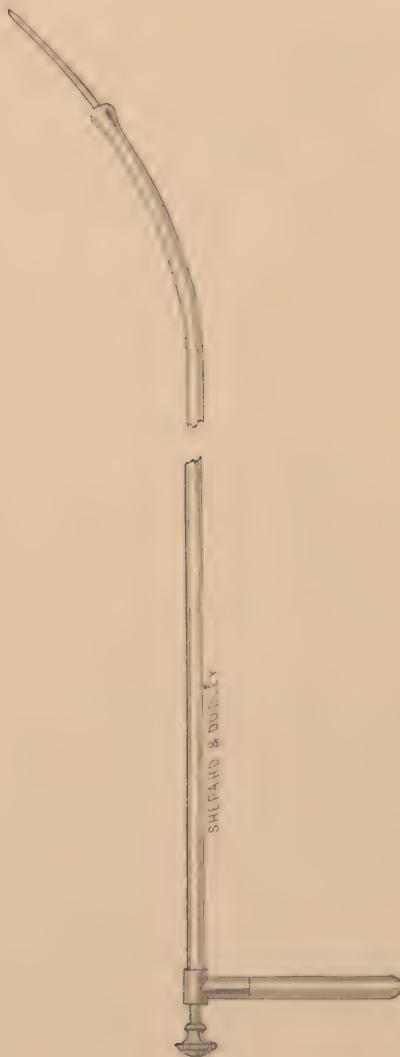


FIG. II.

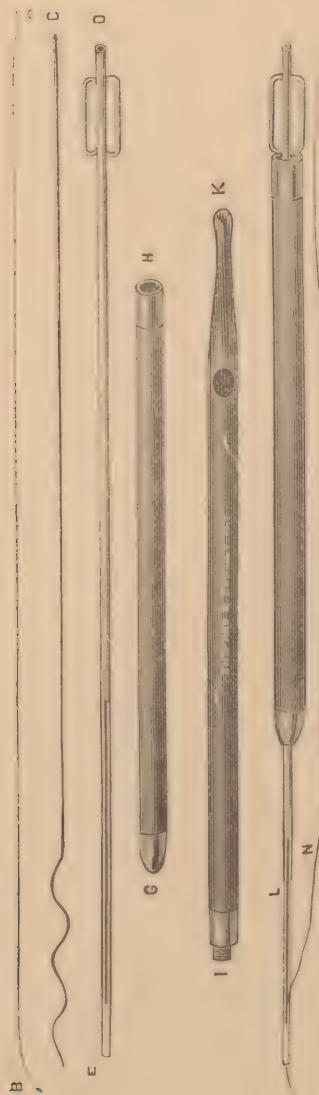


knife between them into the groove and along the director through the stricture, being at the same time careful to see, or rather to feel, that the stricture is freely cut throughout its entire length, the edge of the tenotome being directed downward. After the stricture has been freely incised, the director is withdrawn into the catheter, which is now removed from the urethra, and a full-sized catheter passed into the bladder to ascertain whether the urethra has been fully cleared, and also to empty the bladder of any urine which may be present. The little wound is covered by a bit of adhesive plaster, a compress with a T-bandage completes the dressing. No retained catheter is left in the urethra, but whenever there are calls to urinate, the water is drawn off with either a silver or soft catheter. This is certainly a very unique and ingenious operation, and one which strikes at the chief point of objection to all external operations done in the old way, viz., an open wound in the perineum which, in most cases, must heal by the slow process of granulation. Still there are objections to Mr. Dick's operation which will necessarily prevent its coming into general use. In the first place, it is difficult to perform, and requires a degree of dexterity which does not belong to the profession at large; then we have no absolute proof that the director has traversed the stricture, for it may have penetrated a false route, and the incision made subcutaneously, in that event, might be productive of serious consequences. Then, again, he holds as a necessity that *the stricture must, to a small extent, first be dilated*; this is required before his conductor can be introduced. Now, if it is possible to dilate the stricture sufficiently large to admit his director, I hold, upon the same grounds of objection to the operation of Mr. Syme, that there is no necessity for an external operation for the reason that, if a director can be passed, it is possible to dilate, or, this failing, then to do the safer operation of internal urethrotomy.

Mr. W. F. Teevan, of London, has proposed and executed a modification of the operation of Mr. Dick, having the same end in view, viz., to do away with a large external incision, and substitute in its place a small opening through which he prac-

tised a subcutaneous urethrotomy. The method employed was simply one in which a small whalebone guide was worked

FIG. 12.



through the stricture, and over this a small conducting catheter was in its turn introduced into the bladder; then along its groove the tenotome of Mr. Dick carried through the contraction, and the after-treatment conducted as in the operation of Mr. Dick. I am not informed of the success which has attended this procedure of Mr. Teevan; but if permitted to judge of the operation by the instruments which he used (Fig. 12), I am not very favorably impressed with it.

I now desire to describe briefly an operation which I have employed since the year 1868, whenever an occasion has demanded an external section. Thus far it has proved entirely satisfactory to me, and especially so to those upon whom I have had an occasion to perform it.

In the year 1872 I wrote a paper upon the result of my operations by this method, and since that date to the present, with an increased experience, I have seen no reasons to alter the views which were then expressed. I now claim nothing of originality for the operation, since it is based almost entirely upon the old *la boutonnière*; the incision being very small, and made anterior to the stricture; then, a very small probe-pointed director, or whalebone guide is passed along through the stricture, and a delicate tenotome incises its upper wall subcutaneously; the small wound in the integuments is closed by pin sutures, and left to heal by primary union. Adhering to the maxim, "dilate where you can, cut where you cannot," I only resort to this operation in those cases where no catheter or guide can be made to traverse the urethra from the meatus to the bladder; cases which require some operation for the immediate evacuation of retained urine, and in which it is not possible for me perform an internal urethrotomy.

The patient, duly prepared by opening the bowels freely with an enema, and a hot hip bath given to tranquillize the nervous system, is placed upon a table, then secured in the ordinary position for cystotomy, and anæsthetized. I now pass down the urethra the tube of Benique (Fig. 13), which is a plain silver tube open at both ends, about nine millimetres in diameter, and from six to eight inches in length; this tube protects the walls

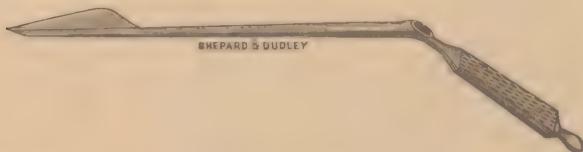
of the urethra, and puts on the stretch the face of the stricture. The tube is now filled with a bundle of small filiform whalebone probes which are carefully passed down to the stricture; by trying first one and then another it is possible that one may

FIG. 13.



engage the opening and pass on into the stricture. This being accomplished, I remove the disengaged probes together with the tube, and after securing the probe in the bladder, I pass over it a Wheelhouse staff which has been drilled through its end to answer the purpose of a Gouley staff, and carry it down to the stricture; it is now handed to the assistant, who holds it lightly, yet firmly, against the coarctation, whilst I open the urethra in the groove of the staff, making an incision about half an inch in length. I then draw outward the staff just sufficiently to enable me to find the whalebone probe as it passes through its end and on into the stricture; this I secure by passing a small blunt hook behind it, after which the staff is removed entirely from the urethra, and the distal end of the probe drawn out through the little wound which has been made; and now, over the probe I pass a little gorgeret (Fig. 14); this

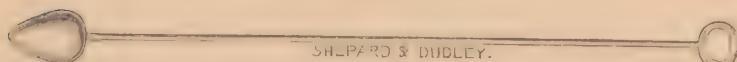
FIG. 14.



has its blade directed upward, and being run along the probe, as its guide, it passes through the opening into the urethra, and then down the stricture, which is cut on its superior face. A catheter is now passed along the entire urethra into the bladder and the urine evacuated, after which I carefully examine the

site of the stricture with graduated metallic ball probes (Fig. 15) for the purpose of detecting any bands which, perchance, may

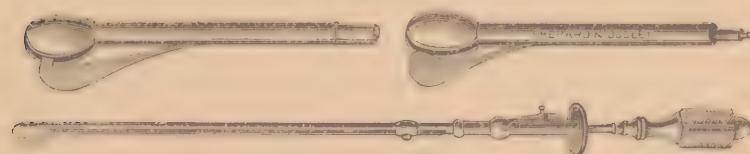
FIG. 15.



SHEPARD & DUDLEY.

remain; if found, they are divided by the retrograde urethrotome of Civiale (Fig. 16), and the full calibre of the urethra restored.

FIG. 16.



In the event, however, that it is not found possible to pass a whalebone probe in the first instance, so as to gain command of the stricture before opening the urethra, I then pass either the staff of Wheelhouse, Gouley, or an ordinary staff of slight curve with deep groove, down to the face of the stricture and practise the Leed's operation, with the exception that I do not rip open the whole stricture; but having gotten the whalebone probe through the coarctation, I thread over it the little gorgorét and incise it on its superior face, just as described in the instance where the probe was passed along the tube of Benique, always taking care to sever any and all bands which may remain. This opening simply serves the purpose of shortening the canal and bringing us nearer the obstruction; it furnishes us a passage of only some few lines in length in which to manipulate our instruments, in place of a canal of several inches in extent, as would be the case if the urethra had not been opened. I thus, virtually perform an internal section; I do not rip open the whole coarctated canal and lay bare to the external wound the cavity of the urethra, but I leave it, so far as the stricture is in question, just in the same condition as an urethra upon which I had done an internal urethrotomy.

In the absence of the little gorgorét, I have found a very nar-

row-bladed urethrotome of Maissonneuve, conducted by a small filiform bougie passed through the external opening and coiled within the bladder, to serve a most excellent purpose, provided the staff is grooved on its concavity, so as to insure the incision being made upon the roof of the urethra. Such, in brief, is the method I have adopted of operating *externally*, and find that it is easy of execution, and satisfactory in its results.

Having carefully divided any existing bands, and restored the lumen of the urethra, I then pass a sound into the urethra, and, after the slight oozing of blood has ceased, I wash the parts thoroughly with cold water, to which may be added either a chlorine or weak mercury solution for the purpose of cleansing and disinfecting the wound; now I close the wound accurately with two or three pin sutures, passed deep enough to engage the divided edges of the urethral canal, and, after coaptating the edges of the skin, I encircle the pins with a flat thread in the form of the figure 8; then the sound is removed, and its place occupied by a full-sized catheter passed down to the prostatic urethra, but not into the bladder. The patient is put in bed and kept on his side, with instructions to push the catheter into the bladder when he has a call to urinate, and always, so soon as the urine has been discharged, to withdraw the catheter sufficiently far to get it out of the bladder, but not beyond the stricture. This catheter is used for only twenty-four to thirty-six hours, just long enough to insure the protection of the wound from the passage of the urine until it has been in a measure glazed over, and the strictured portion softened up by the presence of the inlying catheter. On general principles I am opposed to the *sonde à demeure* or retained catheter, and for obvious reasons too patent to need mentioning here; but the sound or catheter, used as I suggest, answers all the purposes for which it is intended, and keeps the urine from the wound until it is sufficiently protected by a glaze which prevents the urine passing into the external incision. At the expiration of this time the catheter is dispensed with and the patient left to pass his urine at will. About the fourth, or, at latest, the sixth day, I remove the pins, and do nothing more to the wound save keep

up the dressing of lead-water and opium—which is applied immediately after the operation—for two or three days longer. Now the patient is permitted to get up and stir about, and within eight or ten days he resumes his former vocations. The after-attention is such as is usual in all operations for stricture, whether they be external or internal, viz., the systematic use of gradually increasing steel sounds until the maximum calibre attainable in the special urethra has been reached.

With this course judiciously pursued, I find that I am able to discharge my patients perfectly healed within from eight to twelve days; and in not a single instance, out of some twenty-five to thirty operations, have I had to contend with any hemorrhage or the annoying complication of urinary fistulæ.

The advantages to be derived from this operation are, the short time of confinement for the patient, freedom from hemorrhage, quick union by primary adhesion, and the small amount of resultant cicatricial tissue, which is always deposited in greater proportion the longer the healing process continues. The retained catheter for the first day or two does good rather than harm, since it protects the fresh incision from the toxic effects of the urine until it has become glazed over with lymph, and acts, at the onset, by pressure upon the divided stricture, compressing the vessels which have been divided and which might bleed after reaction; it also sustains the urethra as a splint, and prevents the stricture from reuniting until we have time to begin gradual and systematic dilatation with the steel sound. The comparative immunity from urethral fever which my patients have enjoyed after this operation, I feel certain, is due almost entirely to the use of the inlying catheter as I employ it. I do not desire to be understood that I advocate the use of a retained catheter throughout the entire confinement of the patient to bed, but that I use it for only the first twenty-four to thirty-six hours—just sufficiently long to permit the wound to glaze over with lymph, and model, as it were, the granulations by gentle pressure.

In examining the details of the last ten operations which I have done by this method—all of them bad cases—I find that they were enabled to get out and be around the city in the fol-

lowing order: 3 on the fourth day after the operation, 1 on the fifth day, 2 on the sixth, 2 on the seventh, 1 on the ninth, and 1 on the twelfth. The others recovered in about the same proportions.

I am not apprised if any other method of performing external urethrotomy has afforded like rapid results.

SUMMARY.

1. Antiquity of operation.
2. Brief history of its progress.
3. Methods of performing it.
4. Objections to performing it, when possible to pass a conductor into and through the stricture.
5. Objections to leaving an open wound in the perineum to heal by granulation.
6. The advantages of subcutaneous urethrotomy, when unable to relieve the patient by either dilatation or internal urethrotomy.

